

REMARKS

This Amendment is responsive to the Final Office Action dated November 2, 2004.

Claims 1 through 16 are pending in the application. All of the claims are presently rejected under 35 U.S.C. 102(b) as being anticipated by Black et al. U.S. Patent No. 4,253, 343.

Responsive to the rejection, Applicant proposes to amend independent claims 1, 6 and 11 to more patentably distinguish those claims over the cited prior art. Amendments to claims 4, 5, 7, 12 and 16 are also proposed, to conform the language of those claims to the claims from which they depend. Applicant also proposes to add a new independent claim 17, and a new claim 18 which depends from claim 17. With entry of the proposed amendments and new claims, all of the claims are believed to be more patentably distinguishable over the cited prior art and allowable.

More particularly, addressing proposed amended independent claim 1, it is directed to a bearing and shaft assembly for mounting in an opening through a support member for supporting an end of a rotatable member for rotation relative thereto under an axial preload condition. Claim 1 requires a bolt having a threaded end portion threadably receivable and engageable in a threaded hole in the end of the rotatable member, an opposite end portion positionable in the opening through the support member including an enlarged head having a shoulder therearound facing the threaded end portion, and a cylindrical shaft portion extending between the threaded and opposite end portions. Claim 1 requires a bearing having relatively rotatable inner and outer rings, the inner ring having oppositely facing axial ends extending around a central hole therethrough adapted for receiving the shaft portion of the bolt, and

the outer ring including at least one mounting element extending outwardly therefrom and adapted for fixedly mounting the outer ring on a side of the support member opposite the rotatable member such that the inner ring will be positioned and supported by the outer ring in the opening through the support member for rotation relative to the outer ring and the support member.

Claim 1 further requires the threaded end portion and cylindrical shaft portion of the bolt to be insertable through the inner ring of the bearing and the threaded end portion threadedly engageable with the threaded hole of the rotatable member for holding the inner ring of the bearing thereagainst for rotation therewith relative to the outer ring and the support member while exerting an axial tensile force on the bolt, and **supporting the end of the rotatable member for rotation on the support member.**

As explained in the specification of the present application, attendant advantages of the bearing and shaft assembly of claim 1 include the ability to fixedly mount the outer ring on a side of a support member opposite the rotatable member, and that the shaft, **which supports the rotatable member for rotation**, is subject to a tensile force when installed, so as to be less likely to fail from fatigue. Applicant respectfully asserts that the combination of features of proposed amended claim 1, and the attendant advantages thereof, are not disclosed in Black et al. relied on by the Examiner, for the following reasons.

Examining the Black et al. patent, in Fig. 4, reproduced on page 3 of the Office Action, a cutterhead shaft 34 is shown, having "fixed thereto a pulley or sheave 38 (FIGS. 2,4)" Black et al patent Col. 2, lines 46-49. No support for the end of the rotatable member (shaft 34) is shown. As noted in the prior Amendment, examining Fig. 4 more carefully, shaft 34 includes an end having a keyway therein and on which a flange is fixedly mounted so as to necessarily rotate with the shaft by virtue of the presence of a keyed connection therebetween, so as to be "fixed thereto" as required in the specification of the Black et al. patent. Pulley or sheave 38 is mounted around the flange and is connected thereto by an array of bolts.

As a result, all of the elements shown in Fig. 4 are "fixed" together and must rotate together. That is, the flange and sheave pointed to in the Office Action as representing a bearing with inner and outer rings, the bolt identified as a mounting element mounting the outer ring of the bearing, and the bolt threadedly engaged with shaft 34, all rotate together. This arrangement does not, and is not adapted to, support the

rotatable element (shaft 34), as required in the claim. The rejection relies on Fig. 3 of Black et al. as showing a typical bearing.

Addressing Fig. 3 of Black et al., two bearing are shown having inner rings mounted on a bolt. The bolt passes through an end of an arm 50. Arm 50 supports the bolt. The bolt supports the inner rings of the bearings. The outer rings of the bearings support the idler for rotation relative to the inner rings, the bolt and the arm 50. As a result, it is the bolt and arm 50 that constitute a support. This is essentially the opposite of the claimed construction, as the outer ring is the rotatable element, not the inner ring.

Thus, Applicant respectfully asserts that the apparatus of Fig. 4 of Black et al., even in combination with the apparatus of Fig. 3, still does not disclose the required elements of proposed amended claim 1, of a bearing having an outer ring including at least one mounting element extending outwardly therefrom and **adapted for fixedly mounting the outer ring on a side of a support member** opposite a rotatable member **such that the inner ring of the bearing will be positioned and supported by the outer ring in an opening through a support member for rotation relative to the outer ring,** and such that **the inner ring and a rotatable member threadedly engaged by the bolt, will be supported for rotation by the outer ring.** Although Fig. 3 of Black et al. discloses inner rings of a bearing on a bolt, this is not to mount the inner rings on a rotatable member for rotation therewith as required by proposed amended claim 1, but, instead, is to support the inner rings while the outer rings and idler rotate relative to the bolt.

For the foregoing reasons, proposed amended claim 1 is believed to be patentably distinguishable over the cited Black et al. patent and allowable.

Claims 2-5 depend from proposed amended claim 1 and add still further limitations thereto. More particularly, claim 3 requires the rotatable member to be at least partially contained in an interior of an enclosure adjacent to the support member, the opening through the support member extending from an exterior of the enclosure to the interior, and wherein the bolt is insertable through the opening through the support

member from the exterior to the interior and threadedly engageable with the threaded hole of the rotatable member, and the at least one mounting element of the outer ring of the bearing being engageable with elements on the exterior of the support member, such that the bearing assembly is installable and removable from the exterior of the enclosure. These features and capability, in combination with those of proposed amended claim 1, are not disclosed, taught and/or suggested anywhere in Black et al. Claim 4 requires the enclosure to comprise a feeder housing of an agricultural combine, and the rotatable member to comprise a rock trap beater or conveyor sprocket shaft, the at least one mounting element comprising a flange adapted to be mounted by fasteners to a side of the feeder housing. Proposed amended claim 5 depends from claims 3 and 4, and requires the inner ring extend axially beyond the flange so as to extend into an interior of the feeder housing when mounted thereon. None of these features and capabilities of the dependent claims, in combination with proposed amended base claim 1, are disclosed, taught and/or suggested by Black et al. Accordingly, dependent claims 2-5, in combination with proposed amended base claim 1, are believed to be patentably distinguishable over the cited prior art and allowable.

Proposed amended claim 6 is directed to a bearing assembly requiring a member rotatable in an interior space of an enclosure in closely spaced proximity to a support member located adjacent to the space; an elongate bolt including a cylindrical portion extending longitudinally from a larger head to a threaded end; and a bearing including an inner ring and an outer ring supported around the inner ring for relative rotation therebetween, the inner ring including a center hole therethrough receiving the cylindrical portion of the bolt and the outer ring including **at least one mounting element fixedly mounted to a portion of the support member external to the interior space mounting the outer ring in or over an opening through the support member for preventing rotation of the outer ring while allowing rotation of the inner ring relative thereto.** Proposed amended claim 6 further requires the threaded end of the bolt to be threadedly received in a threaded hole in the end of the rotatable member **in the interior space**

holding the inner ring against the end of the rotatable member for rotation therewith while applying a tensile preload force longitudinally through the bolt.

For many of the reasons set forth with respect to proposed amended claim 1 above, incorporated herein by reference, proposed amended claim 6 is believed to be patentably distinguishable over Black et al. Again, in the apparatus of Fig. 4 of Black et al., no bearing is disclosed, and the sheave or pulley is fixedly mounted to the shaft for rotation therewith. The shaft supports the sheave or pulley. Something else must support the shaft. In the apparatus of Fig. 3 of Black et al., the inner rings of the bearings are fixedly mounted on a bolt supported by an arm 50, to allow rotation of the outer rings of the bearings relative thereto. Here, the bolt supports the bearing. The bearing does not support the bolt. Nowhere in Black et al. is an outer ring including a mounting element fixedly mounted on a support member external to an interior space for preventing rotation of the outer ring while allowing rotation of the inner ring of the bearing relative thereto, as required in proposed amended claim 6. And, nowhere in Black et al. is disclosure of fixedly mounting an outer ring of a bearing on a support member illustrated or discussed. For the foregoing reasons, proposed amended claim 6 is believed to be patentably distinguishable over Black et al. and allowable.

Claims 7-10 depend from proposed amended claim 6, and add still further limitations thereto. For instance, claim 8 requires the bolt to be capable of being unthreaded from the threaded hole in the end of the rotatable member and the outer ring dismounted from the support member to allow externally removing the bearing assembly from the enclosure and the rotatable member. Claim 9 depends from claims 6 and 8 and requires the enclosure to comprise a feeder housing of an agricultural combine, and the rotatable member to be a rock trap beater or conveyor sprocket shaft. Claim 10 depends from claims 6, 8 and 9, and requires the support member to comprise a side sheet of the feeder housing and the end of the rock trap beater or conveyor sprocket shaft to be located closely adjacent to an interior surface of the side sheet. None of these features, in combination with the limitations of proposed amended base claim 6, are disclosed or

even suggested in Black et al. Accordingly, claims 7-10, in combination with proposed amended base claim 6, are believed to be patentably distinguishable over the cited prior art and allowable.

Proposed amended claim 11 is directed to an externally installable and removable preloaded bearing and shaft assembly supporting an end of a rotatable member of a feeder assembly of an agricultural combine, for rotation in an interior space in close proximity to a side of an enclosure of the feeder assembly, requiring a bolt, and a bearing including inner and outer rings, the inner ring including a center hole therethrough receiving the shaft portion of the bolt, and

the outer ring including at least one mounting element fixedly mounting the outer ring to the side of the enclosure external to the interior space, mounting the outer ring in or over an opening through the side of the enclosure, the at least one mounting element including a flange on the outer ring attached to the side of the enclosure by at least one externally located fastener.

Proposed amended claim 11 further requires the threaded end of the bolt to be threadedly received in a threaded hole in the end of the rotatable member in the interior space holding the inner ring against the end of the rotatable member for rotation therewith relative to the outer ring and the enclosure while applying a tensile preloading force longitudinally through the bolt.

Again, for many of the reasons set forth with regard to proposed amended claims 1 and 6 above, incorporated herein by reference, proposed amended claim 11 is believed to be patentably distinguishable over Black et al. and allowable. More particularly, Black et al. does not disclose any means whatsoever for mounting the outer ring of the bearing to the side of an enclosure external to an interior space, including a flange on the outer ring attached to the side of the enclosure by at least one externally located fastener, nor the threaded end of a bolt through a hole in the inner ring of the bearing threadedly received in a threaded hole in the end of a rotatable member in an interior space of an enclosure holding the inner ring against the end of the rotatable member for rotation therewith relative to the outer ring and the enclosure, as required in the proposed

amended claim. Instead, Black et al. discloses only the bolt or shaft supporting the bearing.

As a result, by virtue of the bolting and keying together of all of the components shown in the Fig. 4 of Black et al., such that no relative rotation is possible, and the lack of a bearing having inner and outer relatively rotatable rings and the manner of connection thereof as required in claim 11, all of the elements of claim 11 are not shown, disclosed or suggested in Black et al. Therefore, Applicant respectfully asserts that claim 11, and claims 12 through 16 which depend therefrom and include many of the limitations already discussed above, are believed to be patentably distinguishable over Black et al. and allowable.

Proposed new claim 17 is directed to a bearing and shaft assembly for mounting in an opening through a support member for supporting an end of a rotatable member for rotation relative thereto under an axial preload condition, requiring a bolt having a threaded end portion threadably receivable and engageable in a threaded hole in the end of the rotatable member, an opposite end portion positionable in the opening through the support member including an enlarged head having a shoulder therearound facing the threaded end portion, and a cylindrical shaft portion extending between the threaded and opposite end portions. New claim 17 additionally requires a bearing having relatively rotatable inner and outer rings, the inner ring having oppositely facing axial ends extending around a central hole therethrough adapted for receiving the shaft portion of the bolt, and the outer ring including at least one mounting element for mounting the bearing on a side of the support member opposite the rotatable member in the opening through the support member such that the inner ring is rotatable relative to the outer ring and the support member, and wherein the bolt is insertable through the inner ring of the bearing and threadably engageable with the threaded hole of the rotatable member for holding the inner ring of the bearing thereagainst for rotation therewith relative to the outer ring and the support member while exerting an axial tensile force on the bolt, and

the outer ring is mountable in the opening through the support member, for supporting the end of the rotatable member for rotation on the support member.

Applicant respectfully asserts that this combination of features of claim 17 is not disclosed, taught and/or suggested by the prior art cited against the other claims, for many of the reasons set forth above. Accordingly, new claim 17 is believed to be allowable.

Proposed new claim 18 depends from claim 17, and requires the at least one mounting element for mounting the bearing to comprise a flange extending around the outer ring and including an array of holes therethrough at spaced locations therearound and adapted for receiving threaded fasteners therethrough for mounting the outer ring in the opening. This is also not disclosed in the prior art cited against the claims.

Accordingly, claim 18, in combination with claim 17, is believed to be allowable.

None of the prior art references cited in the Detailed Action disclose, teach or suggest a bearing and shaft assembly for supporting a rotatable element as set forth in the proposed claims, nor the resultant preload achieved thereby which is also claimed. Accordingly, entry of the proposed amendment and favorable action and allowance of the claims is respectfully requested.

A one month extension of time is requested to extend the time for submitting this Amendment. The Office Action was mailed on November 2, 2004, and the initial three month period in which to submit a response ended on February 2, 2005. The one month extension of time extends the response time up to and including March 2, 2005.

Enclosed is a check in the amount of \$120.00 which is the charge for an extension of one month as set forth in 37 CFR §1.17(a)(2) for a large entity. The Commissioner is authorized to charge any credit or deficiency to Deposit Account No. 08-1280.

If the Examiner has any further requirements or suggestions for placing the present claims in condition for allowance, Applicant's undersigned attorney would appreciate a telephone call at the number listed below.

Respectfully submitted,

HAVERSTOCK, GARRETT & ROBERTS LLP

A handwritten signature in black ink, appearing to read 'Stephen R. Matthews', is written over a horizontal line.

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